Mobile Digital Surveillance System Application

zito1200 Mobile DVR System

Hardware User's Manual

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For more information, technical support and service about this zito1xxx mobile DVR series, please contact your supplier where you have purchased from.

This manual is for zito1200 mobile DVR series. (1st Edition, 2007)

Announcement

This user's manual is only written for the zito mobile DVR hardware product with supporting Windows based operating system use. The appropriate models for this user's manual are in the following list.

- zito1204
- zito1204P
- zito1208P

Limited Warranty

This product is warranted against manufacturing defects for the period of one year. The warranty period commences on the date of purchase from the authorized reseller/retailer. Your original purchase invoice, showing the date of purchase of the product is your proof of the date of purchase.

During the warranty period, defective parts will be repaired or replaced. There will be no charge for labor or parts during the one-year warranty period from the date of purchase. Any shipping or other cost such as customs incurred costs, etc… which is at customers' responsibility.

This warranty does not cover any failure resulting in loss to software, data, lost profits, lost savings, any incidental damages or other economic consequential damages due to accident, abuse, misuse, negligence and acts of God.

Safety Notice

We make no warranties with respect to this documentation and disclaim any implied warranties of merchantability and fitness for a particular purpose.

We shall not be liable for any error or for incidental or consequential damages in connection with the furnishing, performance, or use of this documentation or the examples herein. The information in this documentation is subject to change without notice.

1. This equipment should not be exposed to water or other liquids.

2. Do not cover the openings; the openings on the equipment are for air convection hence protects the equipment from overheating.

3. Do not attempt to remove the cover of this equipment.

4. If any of the following situations arises, have the equipment checked by an authorized service personnel:

The USB connector is damaged.
The power cord or connector is damaged.
Liquid has penetrated into the equipment.
The equipment has obvious sign of breakage.

Packing List

Before you begin installing your unit, please make sure that the following materials have been shipped:

- 1 x zito1200 series mobile DVR
- 1 x Utility CD (User's Manual & Drivers & DVR software)
- 1 x Cable set (3 pieces)

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Additional Information

Contact your distributor, sales representative, or customer service center for technical support if you need additional assistance.

Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (eg. operating system, version, and application software,… etc.)
- A complete description of the problem
- The exact wording of any error messages

FCC (Class B)

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is not likely to cause harmful interference. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer’s instructions

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Chapter 1 Introduction

1.1 Introduction

The zito 1200 Windows O/S based mobile digital video recorder series provides the best mobile DVR solution in today's DVR market. It is the smallest in vehicle x86 open platform supporting up to 8 channels video inputs for various transportations in the current market. The zito is specially designed with fan less solution to meet harsh environment such as sustaining extreme shock and vibration. By introducing some key features, such as using multilock connector, removable HDD, and having embedded Wi-Fi wireless networking interface for easy and convenience usage. The zito series are the best solution in embedded and mobile application for current and future market.

1.2 Key Features

1.2.1 Vehicle Use

- 12/24 VDC power ready
- Durability in harsh environment

1.2.2 DVR System

- Up to 8 channels of video input
- Up to 120fps maximum

1.2.3 MultiLock System

- Secure and reliable connector for transportation standard
- Hassle free cable management

1.2.4 Removable HDD

- Quick accessibility
- Easy maintenance

1.2.5 Wireless Network

- PCMCIA socket ready
- Information communicating and update

1.2.6 Power Management

- Battery health and performance monitoring
- Automatically power on/off with delay function

1.2.7 GPS System (optional device and software required)

- Real time vehicle tracking
- Informative announcement

1.2.8 General Propose of Input and Output

- Trigger alarm device setting
- Event setting

1.3 Hardware Specification

1.3.1 Video Capture System

- 4 video inputs for zito1204 series
- 8 video inputs for zito1208 series
- 1 audio inputs
- Composite for NTSC/PAL video standard
- Up to VGA solution at 640(H) x 480(V)
- Maximum capture frame rate at 120/100 (NTSC/PAL)
- YUV connector for video data output
- Support MPEG4 and MJPEG compression

1.3.2 Processor System

- Supporting from Intel ULV Celeron M 800Mhz up to Pentium M 1.4Ghz with low voltage
- Intel 852GM Chipset
- L2 cache ranges from 0 up to 2MB
- Award flash BIOS

1.3.3 Memory

- One 200pin SO-DIMM socket
- Supporting DDR 200/226
- Built in 256MB RAM with up to 1GB.

1.3.4 Graphic

- Chipset integrated VGA controller
- Shared system memory up to 64MB
- Up to 1600 x 1200 @ 85Hz

1.3.5 Ethernet

- Intel® 82562GZ chipset
- Rate speed at 10/100MBps
- IEEE 802.3u (100 Base-T) protocol compatible
- Supporting 802.11 b/g WLAN (zito130xP series only)

1.3.6 Storage

- Supporting 2,5” HDD with removable function
- Build in type II Compact Flash socket

1.3.7 I/O Connector

- 1 x PCMCIA socket (zito120XP series only)
- 1 x WLAN internal (zito120XP series only)
- MultiLock Connectors
  . 1 x VGA (D-Sub)
  . 3 x USB port (USB2.0)
  . 1 x LAN port (RJ-45)
  . 1 x Serial port (RS-232)
  . 1 x Audio in
  . 1 x Audio out
  . 1 x Microphone in
  . 4 x GPIO

1.3.8 Environment

- Relative humidity is in between 10% ~ 95% at 40℃ with non-condensing
- Operating temperature is in between 0 ~ 45℃ in fan less
- Shock is at 20G for operating, 80G for storage and transit
- Vibration is at 1.0G with in between 5 ~ 500Hz

1.3.9 Power

- 12 VDC @ 2A and 24 VDC @ 1A
- Maximum power consumption is at 24W

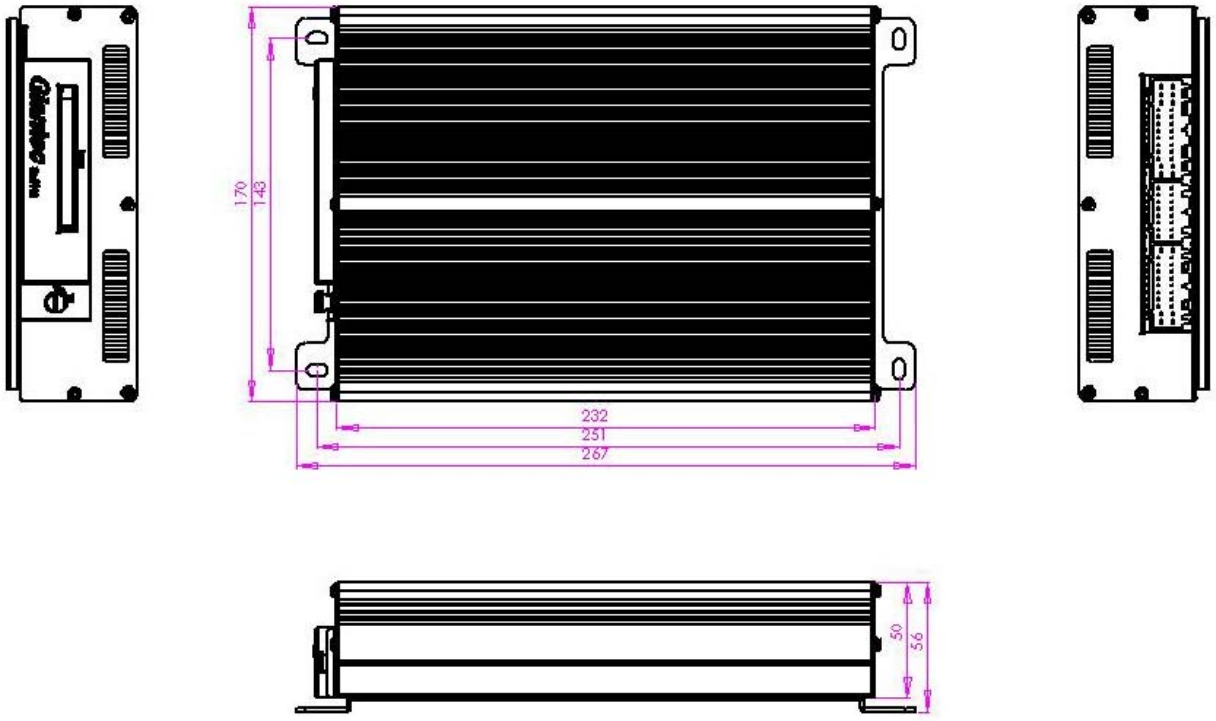
1.3.10 Certification

- CE
- FCC with class B

1.3.11 Mechanical

- Construction is aluminum housing
- Dimension is at 170mm (W) x 50 (H) x 230 (L) / 6.69” x 1.97” x 9.06”
- Net weight is at 2.8kg
- Packaging dimension is at 40cm x 30 x 22
- Packaging weight is at 3.5kg (net) / 4.5kg (gross)

1.4 Dimension Diagram



Chapter 2 Hardware Functional Specification

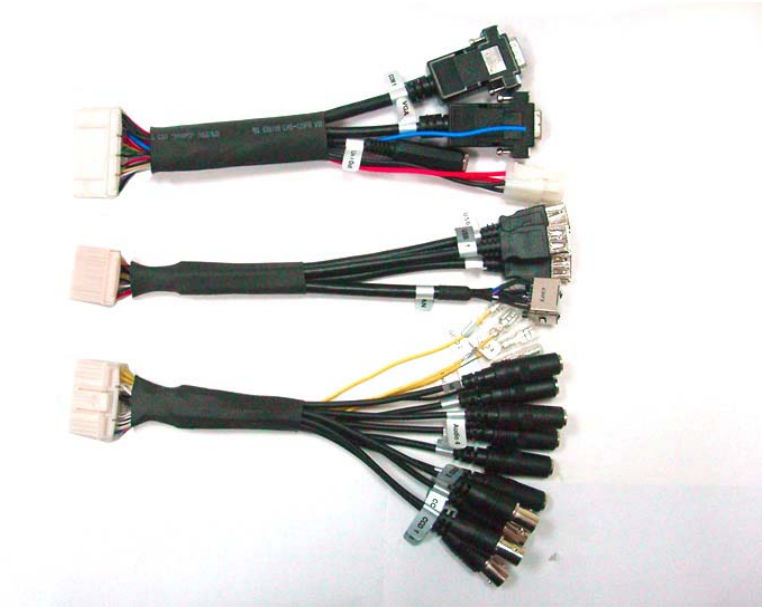
2.1 Zito1200 series hardware outlook

2.1.1 Front View

2.1.2 Back View

2.2 External I/O Connectors

2.2.1 zito1204 series

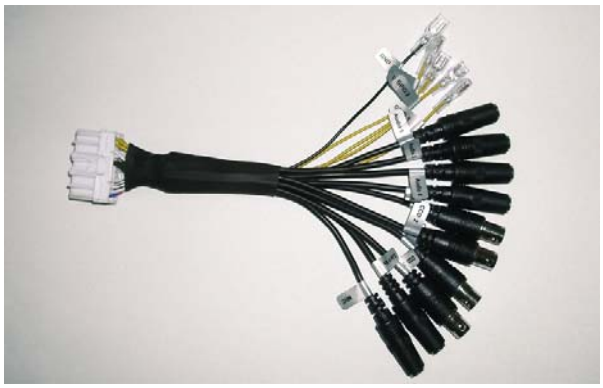


2.2.2 zito1208 series

2.3 Connectors Description

The zito1200 series external I/O connectors' link to various external devices for instance a CRT monitor, security cameras or USB drives. Those connectors come with a cable set which is aiming for evaluation only. For the best performance and installing, please use the **MultiLock connector** for both ends. The following sections list out each of the external I/O connectors with detail function.

2.3.1 Connector A



zito1204

zito1208

2.3.1.1 Video Input

The zito1204 series come with 4 video inputs where the zito1208 series have got 8 video inputs for connecting surveillance cameras.

2.3.1.2 GPIO (General Propose of Input and Output)

A standard 4 GPIO connectors are ready for trigger alarm device or event settings.

2.3.1.3 Audio Input

Depends on the DVR software, zito1200 series allow users to record up to 1 channel of audio from audio enabled security cameras or external microphone devices.

2.3.1.4 Line Input

This is part of hardware specification for Realtek AC'97 audio line in.

2.3.1.5 Microphone Input

This is part of hardware specification for Realtek AC'97 audio microphone in.

2.3.1.6 Ground Connector

The connector is for connecting ground.

2.3.2 Connector B

2.3.2.1 USB Ports

The zito1200 series provide 3 x external USB port for connecting other USB devices, which gives completed Plug & Play and hot swapping for up to 127 external devices. The USB port interface complies with USB2.0 compliant.

2.3.2.2 Ethernet Connector (LAN Port)

The zito1200 series are equipped with Intel® 82562GZ fast Ethernet controller that is fully compliant with IEEE 802.3u 10/100Base-T CSMA/CD standards. The Ethernet port provides a standard RJ-45 jack connector with LED indicators on the front side to show its Active/Link status (Green LED) and Speed status (white LED).

2.3.3 Connector C

2.3.3.1 Power Input

The power input connector carries out from 9~30 VDC external power input.

2.3.3.2 COM Port

The zito1200 series provide a D-Sub type connector (9 Pin), which offers a standard RS-232 serial communication interface in port of COM1.

2.3.3.3 VGA Port

It provides a high resolution VGA interface with a D-sub 15-pin connector to support a VGA CRT monitor and supports VGA up to 1600 x 1200 @ 85Hz resolution and up to 64MB shared memory.

2.3.3.4 Line Output

This is part of hardware specification for Realtek AC'97 audio line out.

2.4 IDE Hard Drive Connector

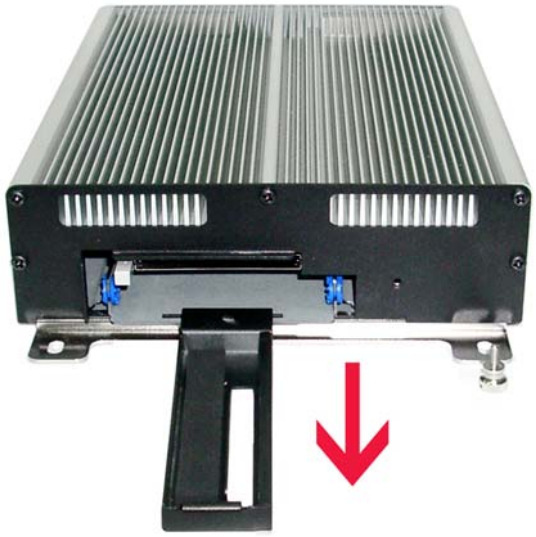
The unit provides one IDE channel which allows you to attach to the board's internal controller with one Enhanced Integrated Device Electronics hard disk drives. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4 and up to UDMA/66.

2.4.1 Connecting Hard Drive

The package includes one 44PIN IDE connector that can connect to a 2.5" hard disk driver.

Step1 Unscrew the locking key by hand or using a screw driver, then push the cover left side to open the cover case.

Step2 Turning the cover case upside down as a tool to slide out the HDD tray.



Step3 Do **MAKE SURE** the HDD pin connector is attaching correctly with the 2.5” HDD.

Correct

Wrong

The pin connector’s edge **MUST NOT** cross over the HDD.

Step4 Sliding the HDD into HDD tray with label is facing up and also using the provided 4 screws to assemble together.

Step5 Placing the HDD tray back into zito unit and close the cover with locking key to complete this installation.

2.5 Solid State Disk

The unit offers a Compact Flash™ card type II socket.

2.5.1 Compact Flash

The Compact Flash card shares a secondary IDE channel which can be enabled or disabled through the BIOS settings.

2.6 Audio Interface

2.6.1 Audio Connector

The zito1200 series provide all major audio signals and it can be optional with Line-in /Line-out /Speaker-out function.

2.7 COM Port Connector

The zito1200 series provide 1 serial port (COM1: RS-232) in DB-9 connector. It provides connections for other serial devices. You can find the pin assignments for the COM port connector in Appendix A.

2.8 VGA Interface Connections

The zito1200 series' VGA interface can drive a conventional CRT display. It has one connector to support display which is for standard CRT VGA monitors. You can find the pin assignments for the VGA port connector in Appendix A

2.8.1 CRT Display Connector

The CRT display connector is a 15-pin D-SUB connector used for standard CRT displays.

2.9 Ethernet Configuration

The unit is equipped with a high performance Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps standards. This is supported by all major network operating systems.

2.9.1 100Base-T Connector

100Base-T connections are made through the on-board RJ-45 connector

2.10 USB Connectors

The unit provides 3 x USB (Universal Serial Bus) ports. This gives a complete Plug and Play, and hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 2.0 which supports 480Mbps transfer rate, and are fuse protected. The adapter cable has a 4 x 2-pin connector on one end and a USB connector on the other. The USB interfaces can be disabling from the system BIOS setup.

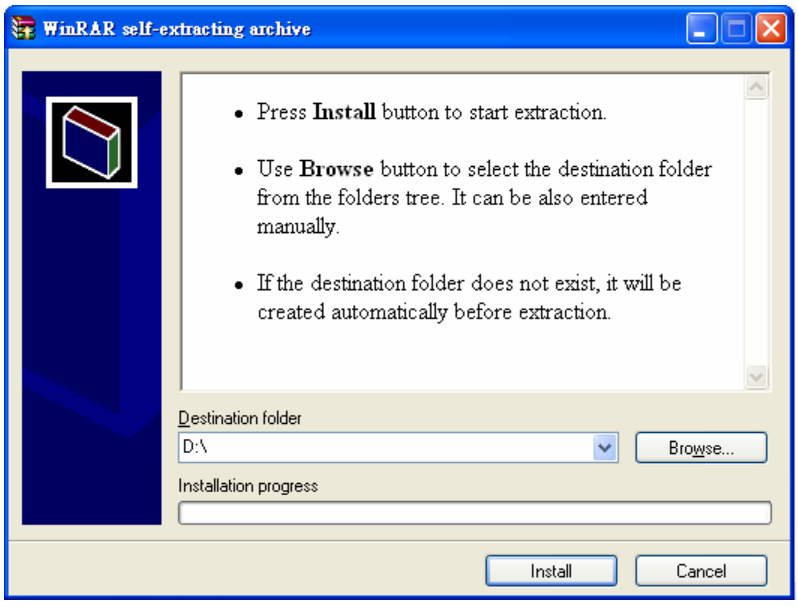
Chapter 3 Software Driver Installation

3.1 Installation Guide

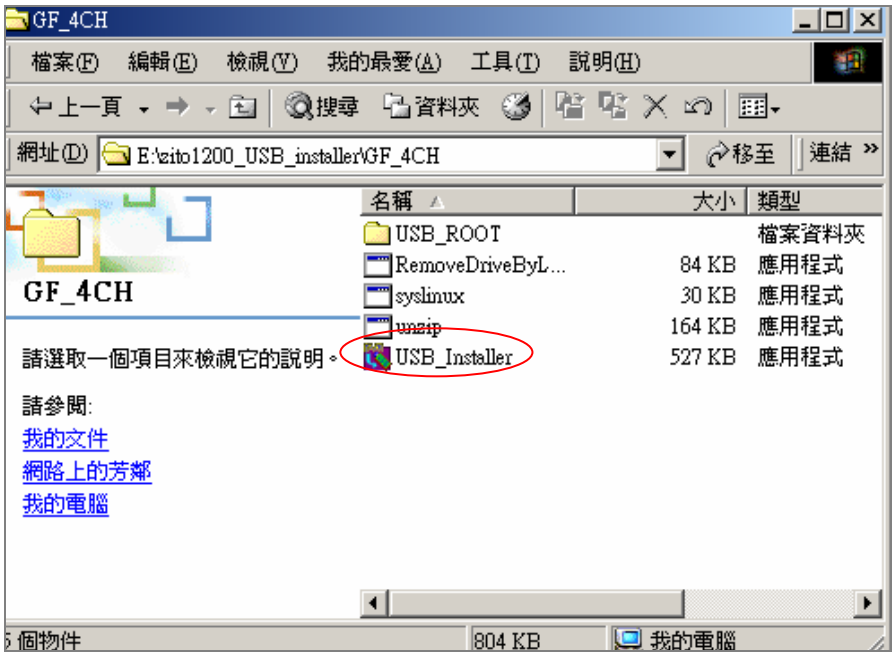
Please follow the steps to install DVR software:

1. Find out a USB pen drive, the size of this drive is at least 128M.
2. Plug the USB drive on your computer (with Windows operating system)

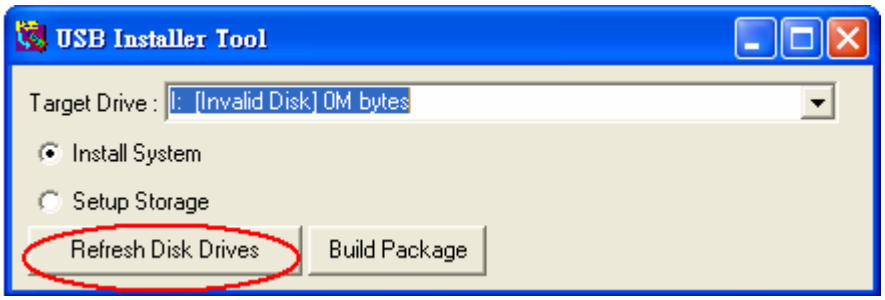
3. Download the **USB_Installer.exe.**
4. Double click the **USB_Installer.exe** , extract the zipped file into a folder of your local HDD (for example : c:\ or d:\ ).


WinRAR self-extracting archive
Press Install button to start extraction.
Use Browse button to select the destination folder from the folders tree. It can be also entered manually.
If the destination folder does not exist, it will be created automatically before extraction.
Destination folder
D:\
Browse...
Installation progress
Install
Cancel

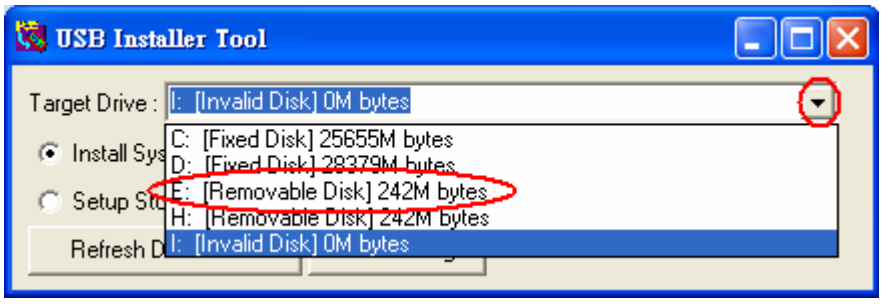
5. The extractor will create a **USB_Installer** folder for you. Please open this folder. (for example : d:\GF_4CH\USB_Installer or GF_8CH\USB_Installer)



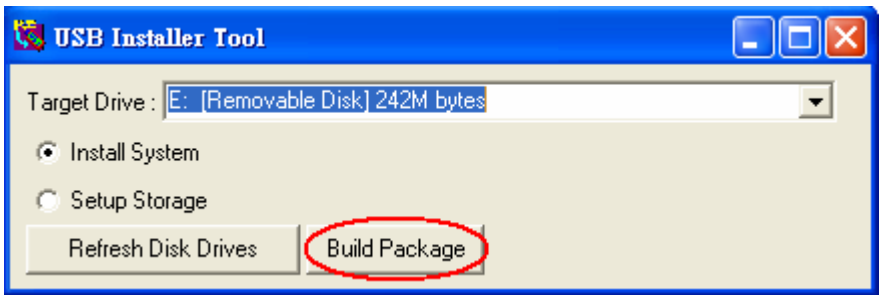
6. Double click USB_Installer.exe to execute the Installer. Click **Refresh Disk Drives** to refresh the drive list.



7. Drop Down the drive list, and choose the drive of your USB pen drive.(for example d:) You can check the size and the disk type (which should be Removable Disk) to make sure the drive is the one you've installed. If you can not find the drive you've installed, please click **Refresh Disk Drives** again.


USB Installer Tool
Target Drive : I: [Invalid Disk] 0M bytes
C: [Fixed Disk] 25655M bytes
D: [Fixed Disk] 28379M bytes
E: [Removable Disk] 242M bytes
H: [Removable Disk] 242M bytes
I: [Invalid Disk] 0M bytes

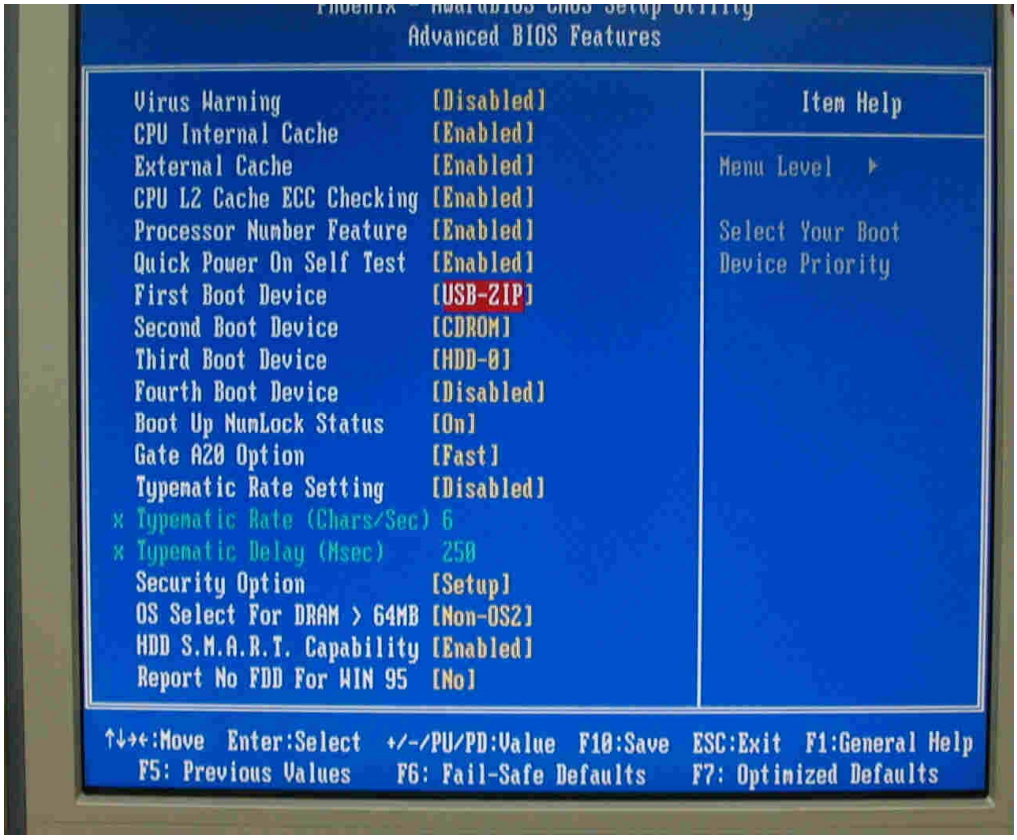
8. After drive has been chosen, please check if the radio button of **Install System** is checked. All things finished, please click **Build Package** button.



9. After drive has been chosen, please check if the radio button of **Install System** is checked. All things finished, please click **Build Package** button.
10. After the program performing the formatting, copying, and some other action, the program will detach the USB Drive from your computer automatically. You can see a dialog :

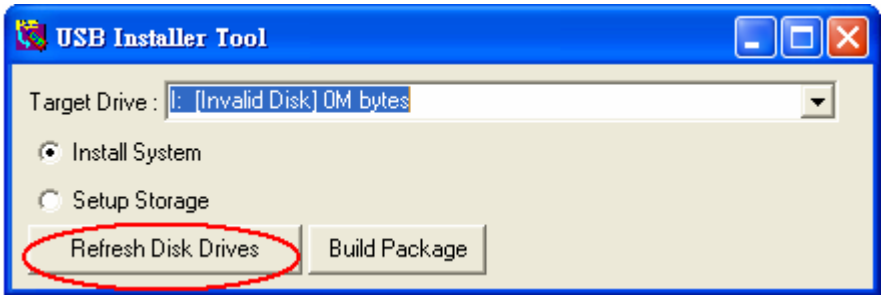
11. You've finished a bootable USB drive which can install Guardfly system into your zito1200. Please remove this USB drive from the Windows computer.
12. Plug the USB drive onto the zito 1200, and power on it
13. The installation from USB drive will start automatically. When the installation finished, you will hear several beep sound, and a text of SUCCESS will be displayed on the center of the screen.
14. If the USB can't boot, please follow the steps below:

    A. try to modify the BIOS settings. Hold **DEL** key while the zito is booting.
    B. Enter **Advance BIOS Features**, Try to modify the settings **First Boot Device** , either USB-ZIP or USB-HDD is available, that depends on the type of your USB drive.

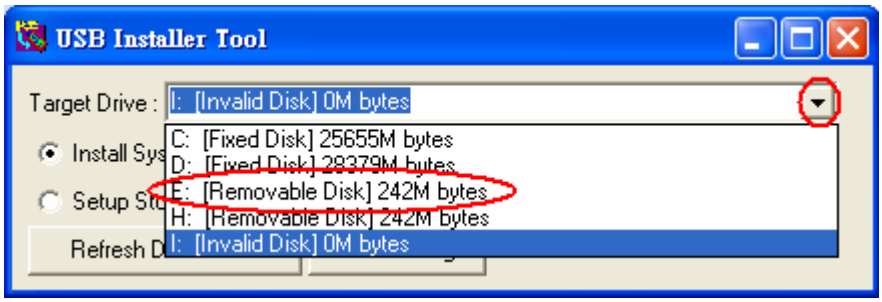

Advanced BIOS Features
Virus Warning [Disabled]
CPU Internal Cache [Enabled]
External Cache [Enabled]
CPU L2 Cache ECC Checking [Enabled]
Processor Number Feature [Enabled]
Quick Power On Self Test [Enabled]
First Boot Device [USB-ZIP]
Second Boot Device [CDROM]
Third Boot Device [HDD-0]
Fourth Boot Device [Disabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
OS Select For DRAM > 64MB [Non-OS2]
HDD S.M.A.R.T. Capability [Enabled]
Report No FDD For WIN 95 [No]
Item Help
Menu Level
Select Your Boot Device Priority
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

C. Save and Exit the BIOS, and reboot.

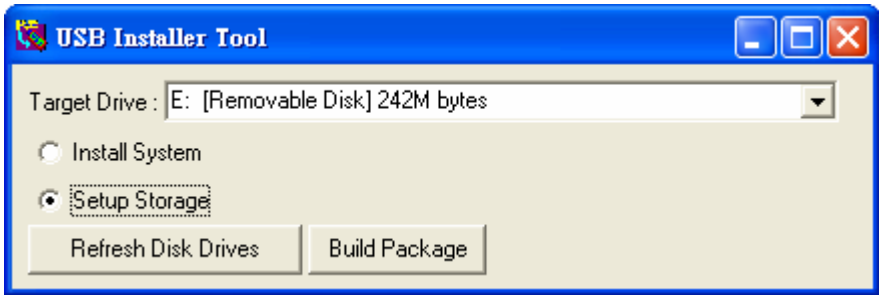
15. Now the system is installed. Power off the zito1200
16. You need to setup the storage HDD for now. Please unplug the USB drive from zito.
17. Plug the USB drive again on your computer (with Windows operating system)
18. Again, double click USB_Installer.exe to execute the Installer. Click **Refresh Disk Drives** to refresh the drive list.



19. Drop Down the drive list, and choose the drive of your USB pen drive.(for example d:) You can check the size and the disk type (which should be Removable Disk) to make sure the drive is the one you've installed. If you can not find the drive you've installed, please click **Refresh Disk Drives** again.



20. After the drive has been chosen, please make sure the radio button of **Setup Storage** is checked. Click **Build Package** when all things have finished.



21. This action will build a USB drive which can setup you HDD storage for Video Recording. After the job finished, you will see a dialog :

22. Please remove this USB drive from the Windows computer.
23. Plug the USB drive onto the zito 1200, and power on it
24. The installation from USB drive will start automatically. When the installation finished, you will hear several beep sound, and a text of SUCCESS will be displayed on the center of the screen.
25. Unplug the USB drive, power off the zito. All installation has been done.

Note:

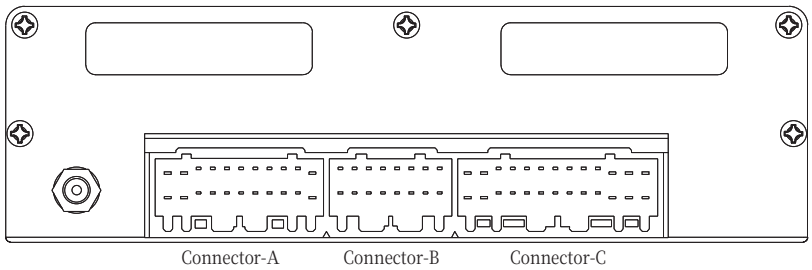
For in case when the DVR system needs to be recovered or reinstalled, please find install program files from driver CD which enclosed in the product package, and follow above instruction to reinstall. The install program file's path in CD ROM is CD ROM drive**:** GF_4CH (**:** GF_8CH). or you may visit Giantec web site http://www.giantec.net to download install program files.

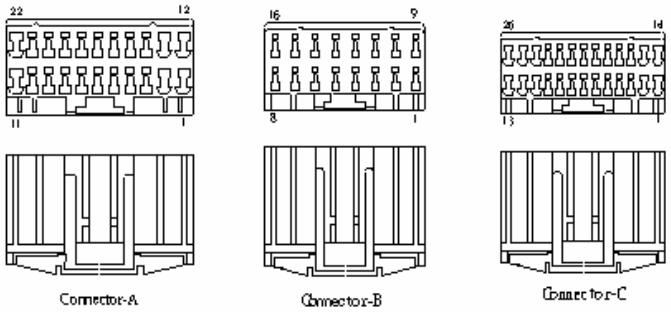
Appendix A

Connectors' Pin Assignment

1 External Connector

1.1 Pin Assignment for MultiLock Connector





1.2 GPIO/Video Connector

Signal	Pin Number of Connector A	
	zito1204/1204P	zito1208P
GPIO-1	12	12
GPIO-2	1	1
GPIO-3	13	13
GPIO-4	2	2
Audio-1	15	15
Audio-2	4	4
Audio-3	14	14
Audio-4	3	3
Ground	5	5
Video In-1	20	20
Video In-2	9	18
Video In-3	19	9
Video In-4	8	7
Video In-5	N/C	19
Video In-6	N/C	17
Video In-7	N/C	8
Video In-8	N/C	6
Video Ground	16	16
Microphone In	10	10
Audio Line In-R	22	22
Audio Line In-L	11	11
Audio Ground	21	21

NOTE: GPIO is TTL compatible interface.

1.3 LAN (RJ-45) Connector

PIN No#	LAN	Pin No# of Connector B
1	RX -	2
2	RX +	1
3	TX -	9
6	TX +	10
9	ACT LED	3
11	LINK LED	11
10,12	VCC	12

1.4 USB Connector

USB Port		Pin No# of Connector B
PIN No#	Name	PIN
1	USB Power 1	4
2	USB0 -	15
3	USB0 +	16
2	USB1 -	7
3	USB1 +	8
1	USB Power 0	6
2	USB2 -	13
3	USB2 +	5
4	GND	14

1.5 CRT Display Connector (VGA)

PIN No#	Signal	Pin No# of Connector C
1	RED	5
2	GREEN	17
3	BLUE	4
4,9,11,12,15	N/C	N/C
5,6,7,8,10	GND	18
13	H-SYNC	15
14	V-SYNC	16

1.6 Audio Output Connector

Audio Out Connector		Pin No# of Connector C
PIN No#	**Name**	**PIN**
1	Audio Line Out-R	2
2	Audio Line Out-L	1
3	Audio GND	14

1.7 COM1/RS-232 Connector

PIN No#	COM1/RS-232	Pin No# of Connector C
1	DCD	24
2	RxD	23
3	TxD	22
4	DTR	21
5	GND	20
6	DSR	10
7	RTS	9
8	CTS	8
9	RI	7

1.8 Power Source

Power In		Pin No# of Connector C
PIN No#	**Name**	**PIN**
1	12/24V +	12
2	12/24V +	13
3	GND	25
4	GND	26

1.9 Other Connectors

The connectors allow zito1300 series to be connected with other parts of system's components as from the evaluation cables. Problems may encounter during loose or improper connections. Please ensure all connectors are in place and firmly attached.

Component	Location
HDD (IDE) Connector	IDE
Line In	Connector A
Microphone	Connector A
Video Input	Connector A
Audio Input	Connector A
GPIO	Connector A
LAN	Connector B
USB Connector	Connector B
External Power Connector	Connector C
Serial Port	Connector C
VGA Connector	Connector C
Line Out	Connector C

Appendix B

Updating BIOS

The updating procedures as the following:

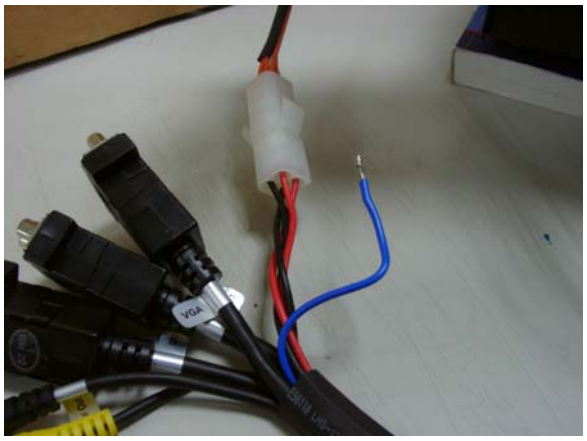
1. It is recommended that you should copy the utility “AWDFLASH.EXE” in driver CD and BIOS binary files into a floppy disk or a USB disk drive. Alternatively, you can copy these two files into the directory that you have made in hard disk.
2. Restart your computer into MS-DOS mode or command prompt only for windows, then move into the directory where the new BIOS file located and use the utility AWDFLASH.EXE to update the BIOS.
3. Type “AWDFLASH new bios filename” under the prompt.
4. Turn off the power after the system updates the BIOS.
5. Turn on the power again.

Appendix C

Hardware In-Lab Testing Installation Guide

Step 1

The blue wire is called “ACC Line” which is acting like an On/OFF switch for our zito unit. During the field installation that you would require this ACC line to be connected to the key’s ignition switch. The black and red power wires are connecting directly to 12/24V DC power supply within vehicle.

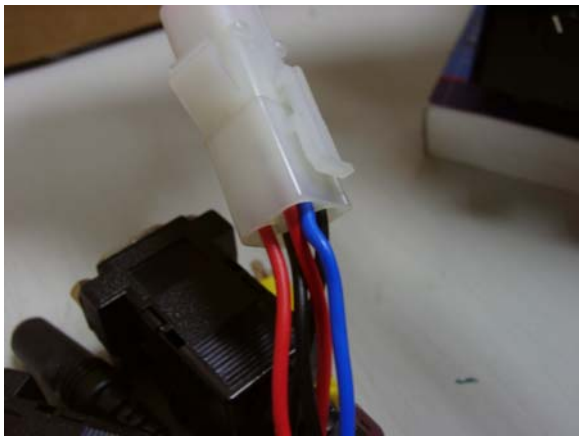


Step 2

Connecting the power cable (red and black) to the regulated DC power supply and setting the voltage at 11V or 22V accordingly.

Step 3

Insert the blue wire (ACC Line) within one of the red power wire together.



Step 4

Selecting the voltage up to 13V or 26V accordingly from setting in Step2, zito unit should be able to start powering up the system as well as loading up the operating system automatically.

NOTE:

When you have pull off the blue wire from connector. It will lead the system starting to power off as well as preparing operating system shut down automatically.

Auto Power ON (system ON/starting) = ACC attach to the +power cable.

Auto Power OFF (system shutdown) = ACC detach from the +power cable